

Insuring Supply Chain Risk

USD **56**
billion

Cost of supply chain disruptions in 2015¹

43%

Percentage of corporations that do not purchase any supply chain insurance cover²

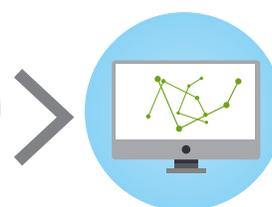
CEOs and CROs acknowledge the value of supply chain insurance as an important risk management tool but still don't purchase insurance cover. **Why is that?** According to corporate risk managers, the right supply chain, or contingent business interruption (CBI), coverage is **unavailable, inadequate, or unaffordable.**³

AIR Supply Chain Consulting Services enable (re)insurers and (re)insurance brokers to improve the availability, adequacy, and affordability of supply chain, direct business interruption (BI), and CBI insurance offerings by providing quantitative analytics that support more accurate pricing and managing accumulation risk. These analytics provide a holistic view of supply chain risk that allows (re)insurers to better understand their insured's network risk; prepare for rare, high-consequence losses; and quickly respond to an insured's claims. AIR Supply Chain Consulting Services provide a gateway to the traditionally underserved CBI market and can help your organization:

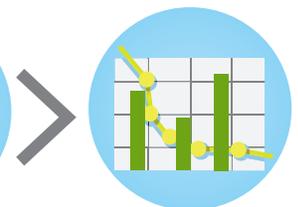
- **COMPLETE THE NETWORK.** Augment your data with default suppliers and products from AIR's proprietary supply chain industry definitions and exposure database
- **PRICE RISK.** Make quantitative, risk-optimized CBI and BI underwriting and pricing decisions
- **MANAGE RISK.** Optimize risk accumulation and rapidly perform sensitivity tests across multiple portfolios and industries
- **BENCHMARK.** Compare potential supply chain losses for individual accounts or portfolios against industry peers
- **RESPOND IN REAL TIME.** Evaluate events in near real time and rapidly deploy claims resources to affected locations
- **GAIN COMPETITIVE ADVANTAGE.** Differentiate your offerings from the competition with improved CBI risk insights and knowledge



Your Supply Chain



AIR Supply Chain Consulting Services



Your Risk, Quantified

Map your insured's supply chain, identify active or potential disruptions, and use AIR supply chain analytics to quantify previously hidden risk in your portfolio.



TRANSFORMING COMPLEX SUPPLY CHAIN RISK INTO A BUSINESS OPPORTUNITY

As supply chains have grown more complex and global in scope, they have become exposed to a wider variety of risks than ever before. In a recent survey of corporations, 43% of respondents indicated that they have between 20 and 1,000 key suppliers that, if disrupted, could directly affect their own production.⁴ These disruptions are also costly, with 34% of the same corporations reporting between EUR 1 million and EUR 500 million in supply chain losses in 2016.

The abundance of exposed risks is further compounded by the pervasive lack of visibility into the supply chain, particularly beyond Tier 1. In the same survey, 31% of all supply chain disruptions were identified as originating at Tier 2+ suppliers and 40% of all disruptions were deemed untraceable because of limited supplier data. For a (re)insurer, the result is an intractable risk assessment problem: The insured exposure and sources of disruption are frequently unknown and the losses are potentially large, leading (re)insurers to write conservative CBI policies with low limits and high deductibles. On the other hand, this situation presents a potential business opportunity for (re)insurers to offer new

products and additional capacity to the largely underserved CBI market, as long as those same (re)insurers possess the data and tools necessary to effectively price and manage CBI risk.

AN INNOVATIVE AND FLEXIBLE SUPPLY CHAIN MODEL

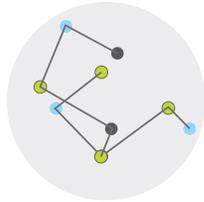
The AIR Supply Chain Model integrates catastrophe and non-catastrophe risk analytics with scientifically based network models to develop quantitative views of your insured’s supply chain risk.

Acknowledging the challenges with supply chain data collection and supplier visibility, the AIR Supply Chain Model is built using a flexible framework that blends an insured’s known supply chain data with AIR’s proprietary industry-level supply chain data (industry exposure database) to build a comprehensive view of an insured’s supply chain risk. This supply chain industry exposure database contains the geographic locations, employee counts, revenue, and corporate information for 3.4 million raw material, commodity, and final parts manufacturing locations across 17 primary industries, and can be used to identify likely suppliers when detailed data is not available.



Define Industry

Define the component parts and the process for how a product flows from one tier of a supply chain to another (e.g., from raw materials to final products).



Define Network

For a given company, map the interdependency between the global network of suppliers and its production facilities.



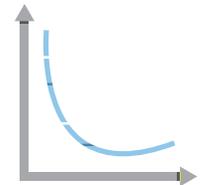
Calculate Disruption

Run a probabilistic or “what-if” analysis to calculate direct downtime at each supplier and final production facility.



Propagate Disruption

Leverage the industry and network definitions to track the path of a disruption from a supplier to dependent final production facilities.



Calculate Losses

Determine downtime and lost revenue caused by both direct and indirect disruption at each supplier and final production facility.

AIR’s flexible supply chain modeling framework captures the parts of your supply chain you know and the parts that you don’t, providing a more comprehensive view of risk than you ever thought possible.

A CUSTOMIZABLE SUPPLY CHAIN RISK ASSESSMENT

The AIR Supply Chain Model generates quantitative deterministic and probabilistic BI and CBI risk metrics that support (re)insurance underwriting and accumulation analyses. Our team works with organizations to address three critical needs that enable (re)insurers to build a quantified view of supply chain risk and make better decisions around CBI and BI cover:

1

Exposure and Network Data

The AIR Supply Chain Consulting Services Team works with you to import named suppliers and known exposure information and to infill likely suppliers for higher tiers or other unknown parts of the supply chain. Use any of AIR's 17 pre-constructed industry definitions to define critical paths in the supply chain or build your own industry view while still leveraging the global network data embedded in the model.

2

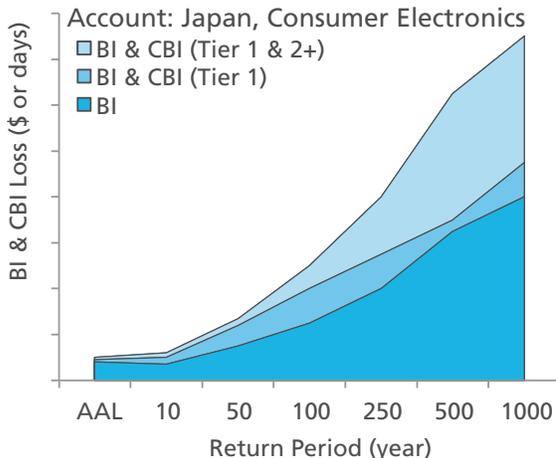
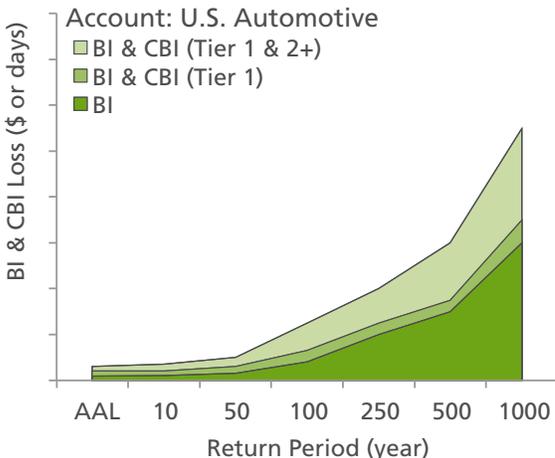
Pricing Support

No one can predict the future, but AIR's probabilistic analyses can provide your organization with reliable estimates of potential supply chain disruptions for the coming year. AIR runs millions of plausible future disruptive events against an insured's supply chain to generate familiar risk modeling outputs of average annual losses and loss exceedance probabilities for BI and CBI. Visualize the risk you're missing by considering BI alone, differentiate accounts by industry, and integrate probabilistic CBI outputs into your underwriting workflow (see figure). AIR will assist your organization with performing marginal analyses to assess the impacts of variations in policy conditions or modeling assumptions and to optimize the BI and CBI pricing for each of your insureds.

3

Accumulation Evaluation

Global interconnectivity in supply chains means that addressing CBI risk on an account-by-account basis may leave you overexposed. AIR's supply chain tools can be used to model your entire portfolio to identify risk "hot spots" where policy conditions may need to be adjusted. Risk accumulations can be simulated using AIR's global suite of probabilistic extreme event models or using deterministic ("what-if") scenarios. These scenario analyses can provide you with additional insights for negotiating renewals and perspective for re-thinking how you manage your accumulations.



Differentiate BI and CBI losses for individual accounts or portfolios. Quantify the additional risk that is not captured when considering only direct BI.

Own Your Supply Chain Risk

Contact supplychain@air-worldwide.com to set up a free 30-minute consultation with the AIR Supply Chain Consulting Services Team.

Read up on the challenges of modeling supply chain disruption and CBI losses by downloading the AIR issue brief: <http://w3.air-worldwide.com/SupplyChainIssueBriefRegistration>

ABOUT AIR WORLDWIDE

AIR Worldwide (AIR) provides risk modeling solutions that make individuals, businesses, and society more resilient to extreme events. In 1987, AIR Worldwide founded the catastrophe modeling industry and today models the risk from natural catastrophes, terrorism, pandemics, casualty catastrophes, and cyber attacks, globally. Insurance, reinsurance, financial, corporate, and government clients rely on AIR's advanced science, software, and consulting services for catastrophe risk management, insurance-linked securities, site-specific engineering analyses, and agricultural risk management. AIR Worldwide, a Verisk ([Nasdaq:VRSK](https://www.nasdaq.com/markets/stocks/quotes/VRSK)) business, is headquartered in Boston with additional offices in North America, Europe, and Asia. For more information, please visit www.air-worldwide.com.

¹ [Business Insurance](#), 2016

² [Business Continuity Institute/Zurich Insurance](#), 2016

³ [AIRMIC](#), 2015

⁴ [Business Continuity Institute/Zurich Insurance](#), 2016